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calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.

Remarks

I. Introduction

Claims 1-4 are pending.

Claims 1-4 stand rejected.

Claim 1 is hereby amended. No new matter has been added.

Claims 1-4 are submitted for reconsideration by the Examiner.

II. Response to 35 U.S.C. §103(a) Rejections

Claims 1-4 were finally rejected by the Examiner in an Office Action dated October 1, 1999, as being unpatentable under 35 U.S.C. §103(a) over U.S. Patent No 4,496,583 ("Yamamoto") in view of either U.S. Patent No. 5,232,595 ("Meyer") or U.S. Patent No. 4,876,007 ("Narou") and U.S. Patent No. 2,862,542 ("Norton"). The final rejection of claims 1-4 was affirmed by the Board of Patent Appeals in a Decision on Appeal dated February 20, 2002. Applicant timely filed the currently pending CPA application on Monday, April 22, 2002. Applicant respectfully submits that Yamamoto, in view of Meyer or Narou and Norton, does not render obvious the present claims for the following reasons.

Claim 1 is independent. Claim 1, as amended, relates to a method for manufacturing a pleated filter material from a thermally bonded non-woven fabric. Claim 1 recites that the method includes the step of forming a single fibrous web from fully drawn and undrawn synthetic fibers. Claim 1 also recites that the method includes the step of calendering the single fibrous web in a single calendering step. Furthermore, claim 1 recites that, during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding. In addition, claim 1 recites that, during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.

Applicant respectfully submits that Yamamoto, in view of Meyer or Narou and Norton, does not render obvious claim 1 for at least the reason that Yamamoto fails to teach or suggest, either separately nor in combination with Meyer, Narou or Norton, all of the limitations recited in claim 1. For example, Yamamoto fails to teach or suggest, either separately nor in combination with Meyer,

Narou or Norton, a method for manufacturing a pleated filter material from a thermally bonded non-woven fabric that includes the step of forming a single fibrous web from fully drawn and undrawn synthetic fibers, as recited in amended claim 1. The undrawn fibers from the same polymer have a melting point of approximately 100 degrees C. Due to their low softening temperatures, the undrawn fibers are therefore able to develop binding properties, e.g., they are used as thermoplastic fibers. Specification, page 2, lines 21-23. Fully drawn fibers, on the other hand, have a very high melting point and softening point of more than 220 degrees C. According to the present invention, the fiber structure of the fully drawn fibers is maintained during calendaring of the non-woven fabric, enabling the non-woven fabric to have satisfactory stability and high porosity. Thus, a stated objective of the present invention, e.g., to produce a filter material in which even under the influence of mechanical and/or thermal stresses during filtration, the spacers do not change their shape and remain stable during the entire service life, Specification, page 2, lines 9-13, is achieved in part by the step of forming a single fibrous web from fully drawn and undrawn synthetic fibers, as recited in amended claim 1.

In contrast, Yamamoto describes a process that evidently employs partially-drawn fibers. Specifically, referring to Examples 13 and 14 of Yamamoto which were relied on by the Examiner and the Board in rejecting the claims, Yamamoto describes a process whereby polyethylene terephthalate fibers are spun at an extruder temperature of 300 degrees C and a drawing off speed of 3000 m/min. In a second step, the resulting fibers are drawn at a draw rate of 1.3 and then processed further into short-cut fibers and paper patterns. These steps result in a fiber which is only partially drawn. This is evidenced by the results obtained by the Examples 13 and 14. In these examples, the binding of the non-woven fabrics occurs at a temperature of 180 degrees C and at a high pressure, leading to the conclusion that the binding fibers are partially drawn and that their binding ability is present only under such extreme conditions. For this reasons, the products produced by Examples 13 and 14 of Yamamoto are paper-type, dense products in which the used fibers are highly plasticized and pressed flat in the manner of a foil under the conditions in the calendar, resulting in products that have a very low porosity. As such, the products produced by Examples 13 and 14 of Yamamoto do not achieve the above-stated objective of the present invention. Furthermore, none of these features are taught or suggested, either separately or in combination, by Meyer, Narou and Norton.

To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must

be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (F. d. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Since Yamamoto, in view of Meyer or Narou and Norton, does not teach, or even suggest, all of the limitations of claim 1 as more fully set forth above, it is respectfully submitted that Yamamoto, in view of Meyer or Narou and Norton, does not render obvious claim 1. It is therefore respectfully submitted that claim 1 is allowable for these reasons. Withdrawal of this rejection is therefore respectfully requested.

As for claims 2-4, which depend from claim 1 and therefore include all of the limitations of claim 1, it is respectfully submitted that Yamamoto, in view of Meyer or Narou and Norton, does not render obvious these dependent claims for at least the same reasons given above in support of the patentability of claim 1. In re Fine, *supra* (any dependent claim depending from a non-obvious independent claim is non-obvious).

III. Conclusion

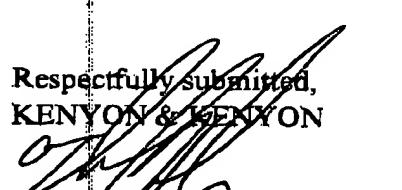
Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached page is captioned "Version with Markings to Show Changes Made."

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

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By:

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Version with Markings to Show Changes Made

IN THE CLAIMS:

Claim 1 has been amended without prejudice as follows:

1. (Amended) A method for manufacturing a pleated filter material from a thermally bonded non-woven fabric, comprising :

forming a single fibrous web from fully drawn and undrawn synthetic fibers;
calendering the single fibrous web in a single calendering step, wherein during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding, and wherein during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.